The prognostic value of serum C-reactive protein, ferritin, and albumin prior to allogeneic transplantation for acute myeloid leukemia and myelodysplastic syndromes

Andrew S. Artz,[1] Brent Logan,[2,3] Xiaochun Zhu,[2] Gorgun Akpek, [4] Rodrigo Martino Bufarull, [5] Vikas Gupta,[6] Hillard M. Lazarus,[7] Mark Litzow,[8] Alison Loren,[9] Navneet S. Majhail,[10] Richard T. Maziarz,[11] Philip McCarthy,[12] Uday Popat,[13] Wael Saber,[2] Stephen Spellman,[14] Olle Ringden,[15,16] Amittha Wickrema,[1] Marcelo C. Pasquini,[2] and Kenneth R. Cooke[17] from the Center for International Blood and Marrow Transplantation Research

[1]Section of Hematology/Oncology, University of Chicago School of Medicine, IL, USA; [2]CIBMTR, (Center for International Blood and Marrow Transplant Research), Department of Medicine, Milwaukee, WI, USA; [3]Division of Biostatistics, Institute for Health and Society, Medical College of Wisconsin, Milwaukee, WI, USA; [4]Stem Cell Transplantation and Cellular Therapy Program, Banner MD Anderson Cancer Center, Gilbert, AZ, USA; [5]Division of Clinical Hematology, Hospital de la Santa Creu I Sant Pau, Barcelona, Spain; [6]Blood and Marrow Transplant Program, Princess Margaret Cancer Centre, University Health Network, Toronto, ON, Canada; [7]Seidman Cancer Center, University Hospitals Case Medical Center, Cleveland, OH, USA; [8]Division of Hematology and Transplant Center, Mayo Clinic Rochester, Minneapolis, MN, USA; [9]Division of Hematology/Oncology, Department of Medicine, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, USA; [10]Blood & Marrow Transplant Program, Cleveland Clinic Taussig Cancer Institute, OH, USA; [11]Adult Blood and Marrow Stem Cell Transplant Program, Knight Cancer Institute, Oregon Health and Science University, Portland, OR, USA; [12]Blood & Marrow Transplant Program, Department of Medicine, Roswell Park Cancer Institute, Buffalo, NY, USA; [13]MD Anderson Cancer Center, Houston, TX, USA; [14]CIBMTR (Center for International Blood and Marrow Transplant Research), National Marrow Donor Program/Be The Match, Minneapolis, MN, USA; [15]Division of Therapeutic Immunology, Department of Laboratory Medicine, Karolinska Institute, Stockholm, Sweden; [16]Centre for Allogeneic Stem Cell Transplantation, Stockholm, Sweden; and [17]Pediatric Blood and Marrow Transplant Program, The Sidney Kimmel Cancer Comprehensive Cancer Center at Johns Hopkins, Baltimore, MD, USA

Supplemental Tables and Figures.

Supplemental table 1: Significant factors in multivariate analysis of transplant related mortality

Factor	Abnormal, N (%)	Transplant related mortality		
		HR	95% CI	*P*
Biomarker Panel				
Low (<1.5)	200	1.0	-	-
Intermediate (1.5-2.0)	331	1.66	1.10-2.49	.015
High (>2.0)	159	2.72	1.77-4.19	<.001
Body mass index				
< 22	82	1.0		.001
22-29	360	1.15	0.67 – 1.98	.062
30-34	153	1.24	0.69 – 2.24	.47
35+	94	2.37	1.31 – 4.27	.004
Disease				
AML	556	1.0		
MDS	134	2.01	1.41 – 2.89	<.001
HLA match				
8/8	531	1.0		
7/8	159	1.8	1.3 – 2.5	<.001
CMV status, D/R				
-/-	210	1.0		.008
+/+	149	0.9	0.57 – 1.44	.67
+/-	72	1.17	0.67 – 2.03	.59
-/+	242	1.65	1.14 – 2.40	.008
unknown	17	2.49	1.03 – 6.02	.044

Abbreviations: HLA: human leukocyte antigen, AML: acute myeloid leukemia, MDS: myelodysplastic syndromes, CMV: cytomegalovirus serologic status, D: donor, R: recipient
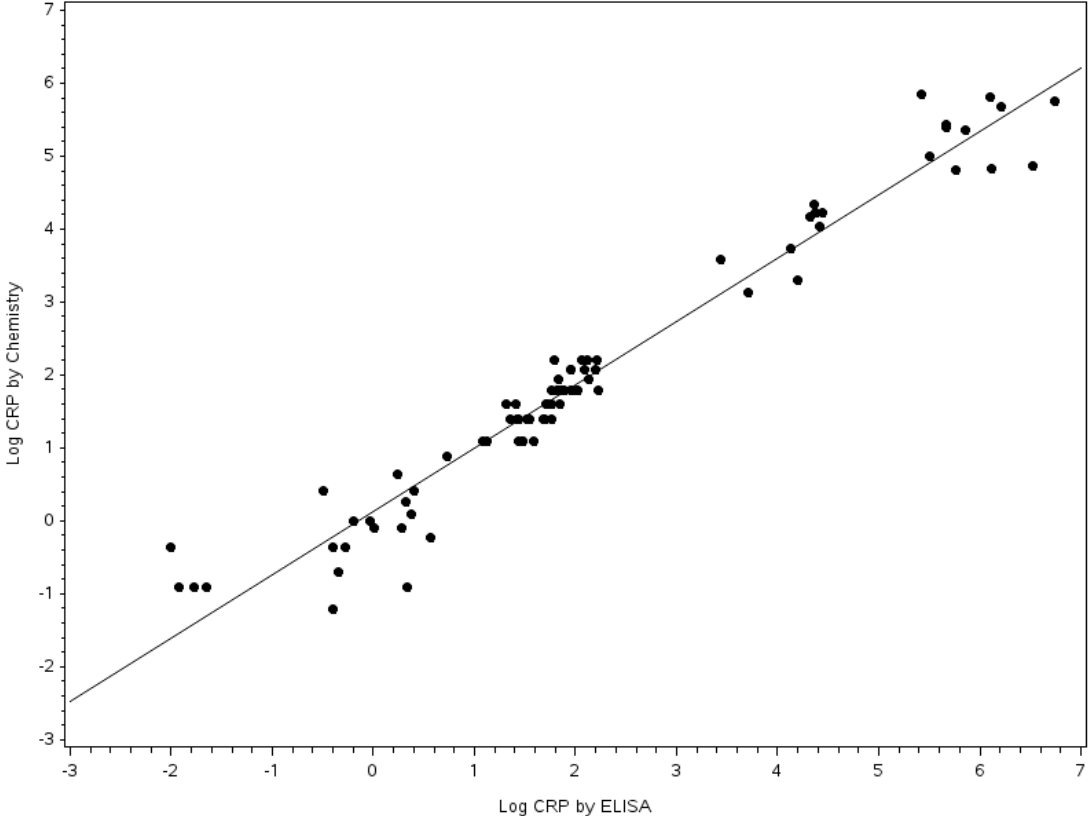
Supplemental table 2: Number and proportion of deaths in the low, intermediate and high biomarker panel risk group.

	Biomarker Score		
	Low (<1.5) (%)	Intermediate (1.5-2.0) (%)	High (>2.0) (%)
Primary disease	43 (53)	78 (45)	44 (35)
New malignancy	1 (1)	1 (1)	1 (1)
GVHD	10 (12)	27 (16)	13 (10)
IPN	4 (5)	12 (7)	9 (7)
Infection	11 (14)	16 (9)	19 (15)
Organ failure	4 (5)	20 (12)	18 (14)
Others	6 (7)	15 (9)	15 (12)
Unknown	2 (2)	3 (2)	6 (5)
Total	81	172	125

Supplemental Figure 1. Correlation of log transformed CRP by ELISA to automated chemistry values in an independent dataset from the study samples (n=80).

Supplemental Figure 2. Correlation of log transformed ferritin by ELISA to automated chemistry values in an independent dataset from the study samples (n=73)

Supplemental Figure 1

Supplemental Figure 2